

B1
Neighbor method, a Lin and Kernighan's approach, a k-OPT method, an evolutionary computation method and a combination; and

a movement step of moving the substrate so as to sequentially position each of the areas to be detected into the predetermined detecting field in accordance with the order determined in said determining step.

49. (Amended) A method of exposing a predetermined pattern onto each of a plurality of shot areas on a substrate, said method comprising:

a detecting step of sequentially detecting a plurality of areas to be detected on the substrate by using a detecting apparatus having a predetermined detecting field, each of the areas to be detected having an alignment mark, said detecting step comprising:

B2
a determining step of determining an order of positioning each of the areas to be detected into the predetermined detecting field by using at least one of a Nearest Neighbor method, a Lin and Kernighan's approach, a k-OPT method, an evolutionary computation method and a combination there of; and

a movement step of moving the substrate so as to sequentially position each of the areas to be detected into the predetermined detecting field in accordance with the order determined in said determining step; and

a transferring step of controlling a position of the substrate, based on the detected results in said detection of alignment mark, and sequentially transferring the predetermined pattern onto the shot areas.

50. (Amended) A method of manufacturing a device, comprising,

a detecting step of sequentially detecting a plurality of areas to be detected on the substrate by using a detecting apparatus having a predetermined detecting field,

each of the areas to be detected having an alignment mark, said detecting step comprising:

B2
a determining step of determining an order of positioning each of the areas to be detected into the predetermined detecting field by using at least one of a Nearest Neighbor method, a Lin and Kernighan's approach, a k-OPT method, an evolutionary computation method and a combination thereof; and

a movement step of moving the substrate so as to sequentially position each of the areas to be detected into the predetermined detecting field in accordance with the order determined in said determining step; and

a transferring step of controlling a position of the substrate, based on the detected results in said detection of alignment mark, and sequentially transferring a device pattern onto the shot areas.

53. (Amended) A method of exposing a predetermined pattern onto each of a plurality of shot areas on a substrate, said method comprising:

a detecting step of detecting a plurality of measurement marks provided associated with a plurality of shot areas arranged on a substrate said detecting step comprising:

B3
a first step of detecting at least one of plurality of first measurement marks provided associated with a predetermined shot area out of the shot areas; and

a second step of detecting at least one of a plurality of second measurement marks provided associated with a shot area different from the predetermined shot area, before detecting all of the first measurement marks; and

a third step of detecting one or more remaining first measurement marks which are not detected in said first step, after said second step; and

a transferring step of controlling a relative position between each of the shot areas on the substrate and the predetermined pattern, based on the detected results in said detection of alignment mark, and sequentially transferring the predetermined pattern onto the shot areas.

54. (Amended) A method of manufacturing a device, comprising:

a detecting step of detecting a plurality of measurement marks provided associated with a plurality of shot areas arranged on a substrate, said detecting step comprising:

B3 a first step of detecting at least one of plurality of first measurement marks provided associated with a predetermined shot area out of the shot areas;

a second step of detecting at least one of a plurality of second measurement marks provided associated with a shot area different from the predetermined shot area, before detecting all of the first measurement marks; and

a third step of detecting one or more remaining first measurement marks which are not detected in said first step, after said second step; and

a transferring step of controlling a relative position between each of the shot areas on the substrate and the predetermined pattern, based on the detected results in said detection of alignment mark, and sequentially transferring a device pattern onto the shot areas.

B3 55. (Amended) A mark detecting apparatus which sequentially detects a plurality of areas to be detected on a substrate by using a detecting device having a predetermined detecting field, said apparatus comprising:

a determining device which determines an order for positioning each of the areas to be detected into the predetermined detecting field by using at least one of a Nearest Neighbor method, a Lin and Kernighan's approach, a k-OPT method, an evolutionary computation method and a combination; and

a movement device which is electrically connected to the determining device and which moves the substrate so as to sequentially position each of the areas to be detected into the predetermined detecting field, based on the order determined by said determining device.

61. (Amended) An exposure apparatus that sequentially exposes a predetermined pattern onto each of a plurality of shot areas on a substrate, said exposure apparatus comprising:

B4 a mark detecting apparatus sequentially detecting a plurality of areas to be detected on the substrate by using a detection apparatus having a predetermined detecting field, each of the areas to be detected having an alignment mark, said detection apparatus comprising:

a determining device which determines an order for positioning each of the areas to be detected into the predetermined detecting field by using at least one of a Nearest Neighbor method, a Lin and Kernighan's approach, a k-OPT method, an evolutionary computation method and a combination thereof; and

a movement device which is electrically connected to the determining device and which moves the substrate so as to sequentially position each of the areas to be detected into the predetermined detecting field, based on the order determined by said determining device; and

B4 a transferring control apparatus which is electrically connected to the mark detecting apparatus and controls a position of the substrate, based on the detected results in the detection of alignment mark by said mark detecting apparatus, and sequentially transfers the predetermined pattern onto the plurality of shot areas.

64. (Amended) An exposure apparatus that exposes a predetermined pattern onto each of a plurality of shot areas on a substrate, said exposure apparatus comprising:

a mark detecting apparatus sequentially detecting a plurality of areas to be detected on the substrate by using a detection apparatus having a predetermined detecting field, each of the areas to be detected having an alignment mark, said detection apparatus comprising:

B5 a determining device which determines an order for positioning each of the areas to be detected into the predetermined detecting field by using at least one of a Nearest Neighbor method, a Lin and Kernighan's approach, a k-OPT method, an evolutionary computation method and a combination thereof; and

a control device which is electrically connected to the determining device and controls said detecting device so as to detect a part of the first measurement marks, detect second measurement marks after detecting the part of the first measurement marks, and detect one or more remaining first measurement marks, which are not measured after detecting the second measurement marks; and

a transferring control apparatus which is electrically connected to the mark detecting apparatus and controls a position of the substrate, based on the detected results in the detection of alignment mark by said mark detecting apparatus, and sequentially transfers the predetermined pattern onto the plurality of shot areas.
